FIG. 1 (a)

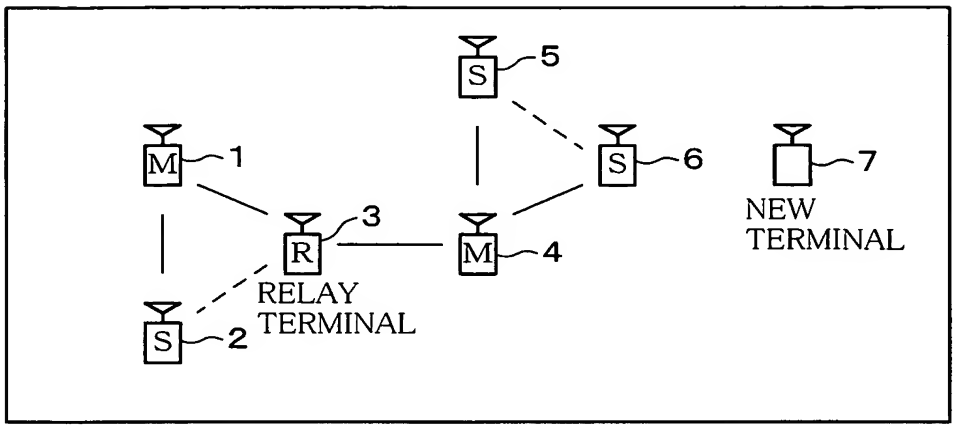


FIG. 1 (b)

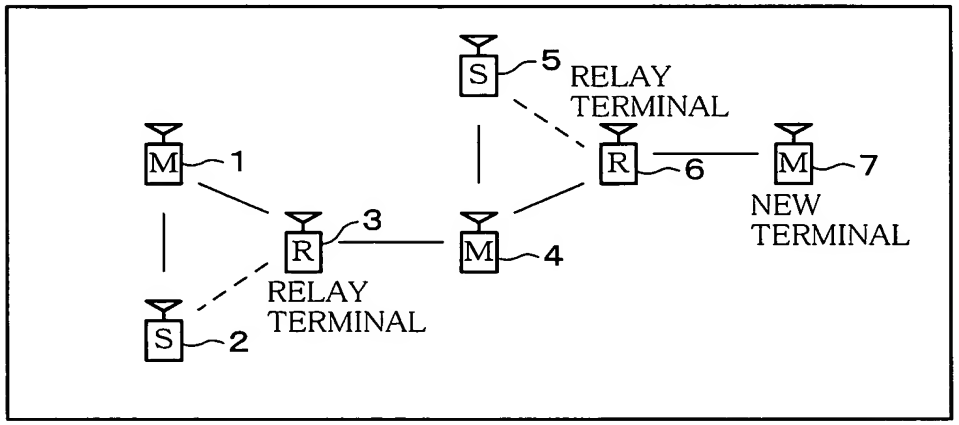


FIG. 1 (c)

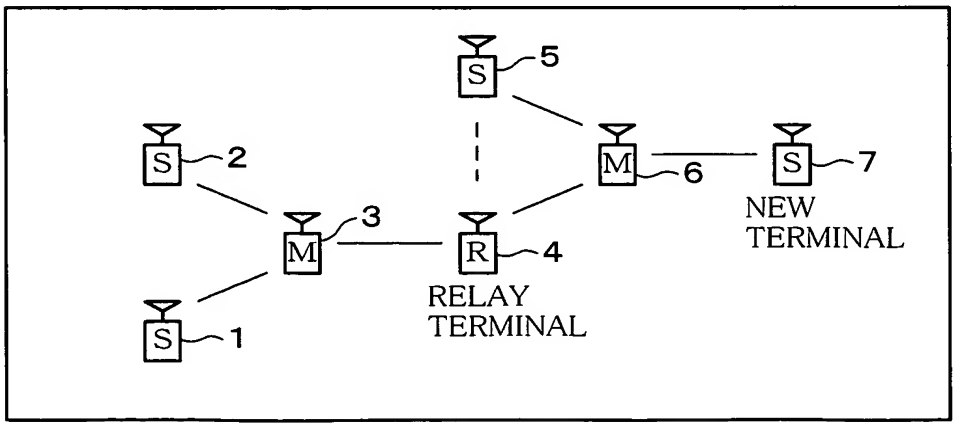


FIG. 2

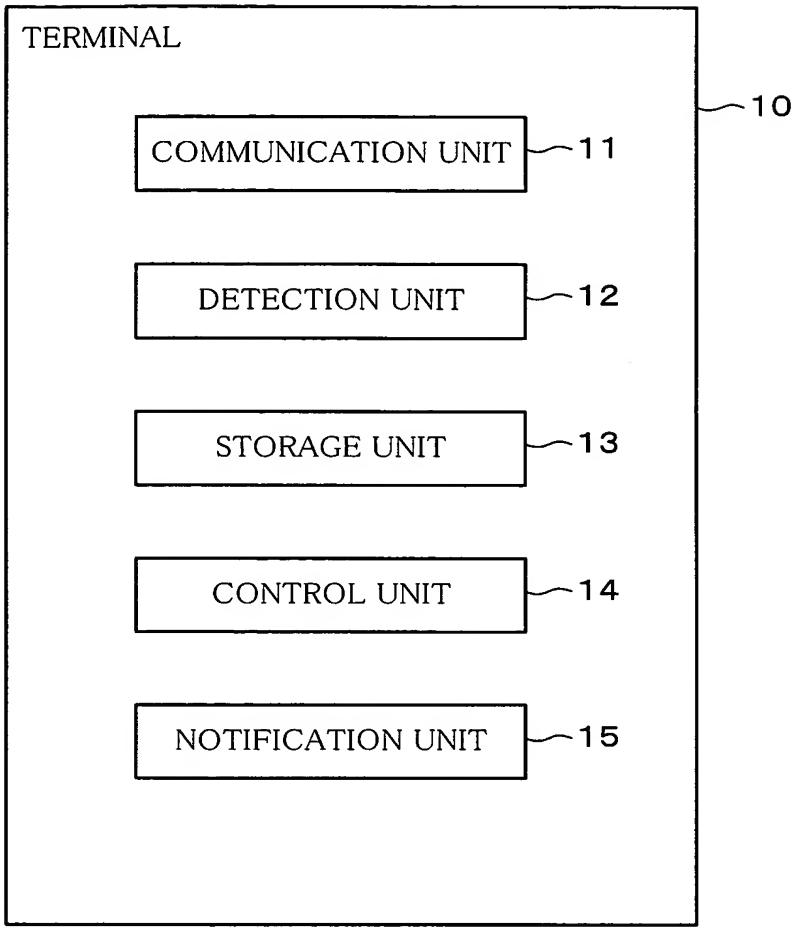

TERMINAL
10
COMMUNICATION UNIT
11
DETECTION UNIT
12
STORAGE UNIT
13
CONTROL UNIT
14
NOTIFICATION UNIT
15

FIG. 3

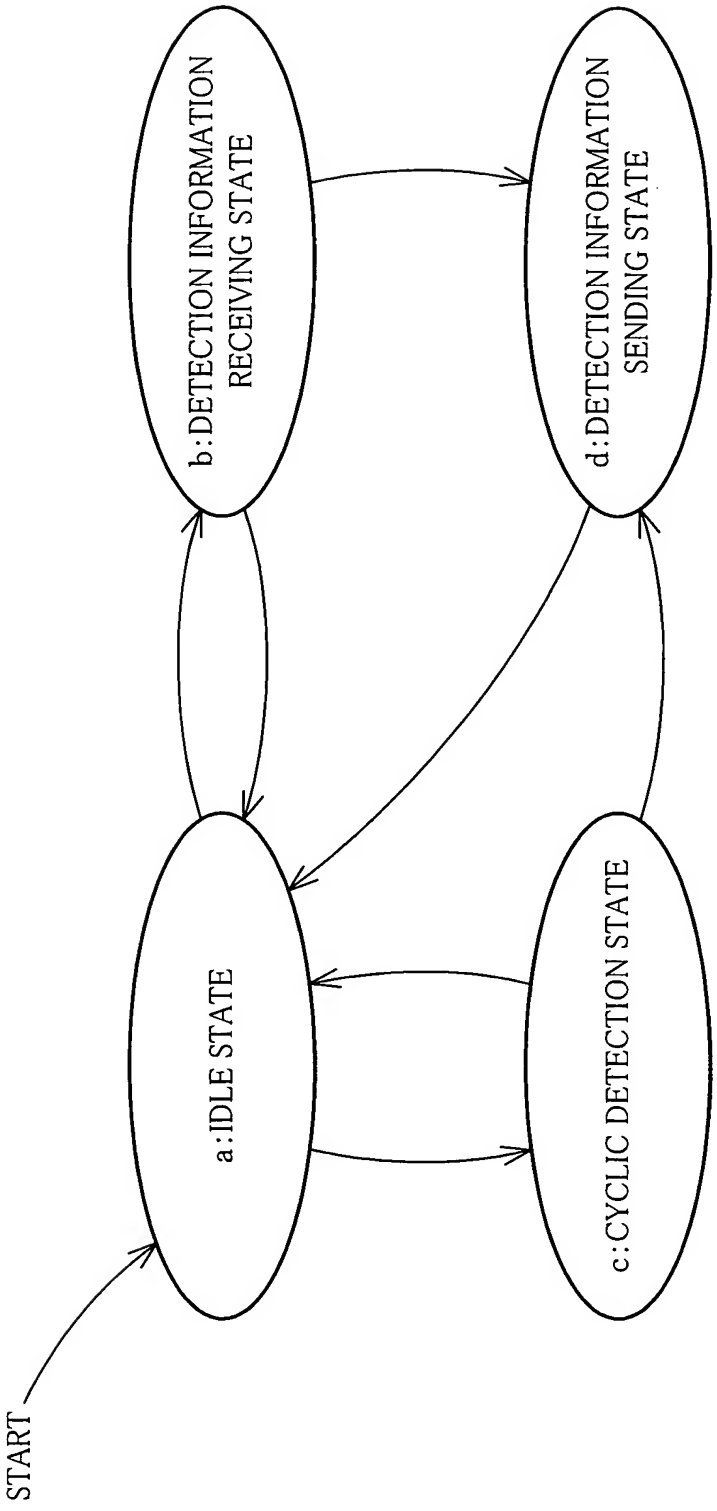

START
a:IDLE STATE
b:DETECTION INFORMATION RECEIVING STATE
c:CYCLIC DETECTION STATE
d:DETECTION INFORMATION SENDING STATE

FIG. 4

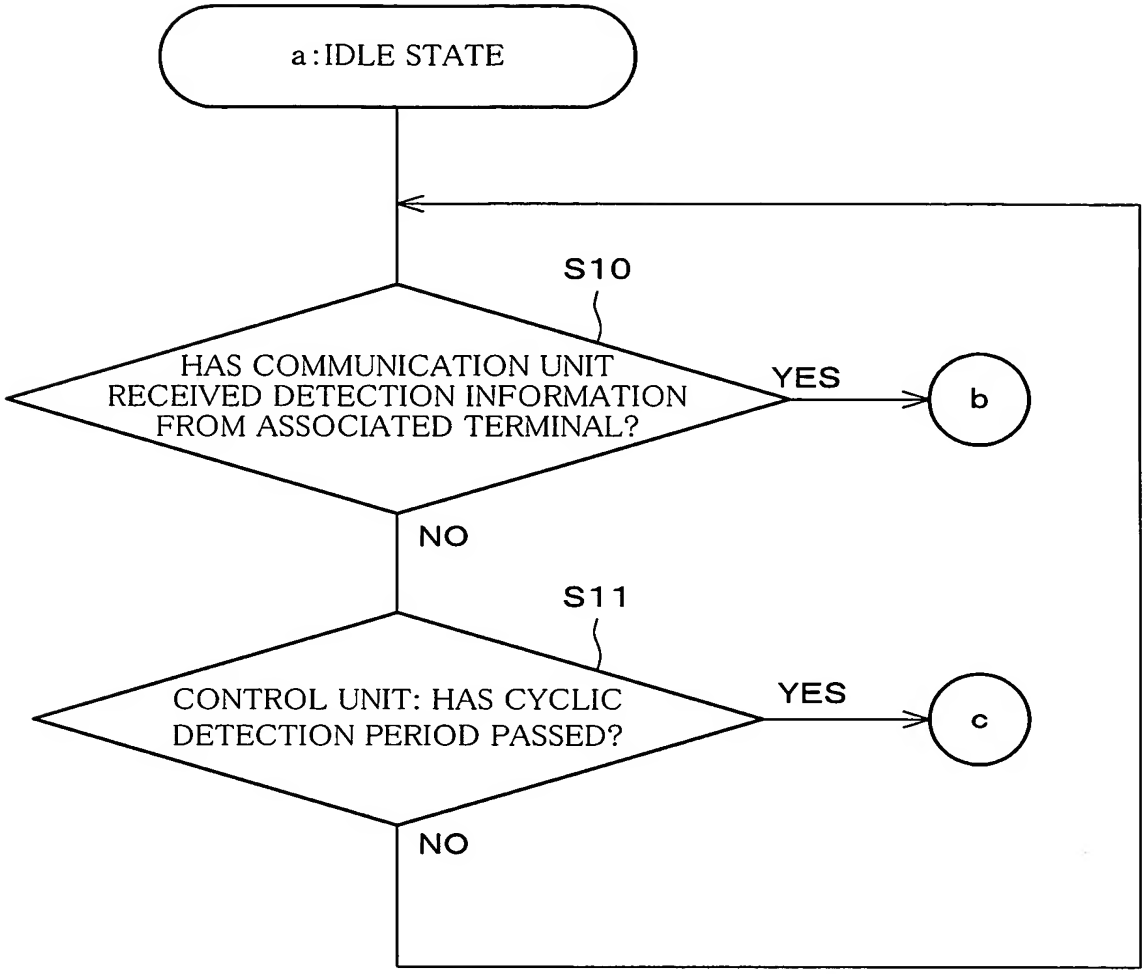

a : IDLE STATE
S10
HAS COMMUNICATION UNIT RECEIVED DETECTION INFORMATION FROM ASSOCIATED TERMINAL?
YES
b
NO
S11
CONTROL UNIT: HAS CYCLIC DETECTION PERIOD PASSED?
YES
c
NO

FIG. 5

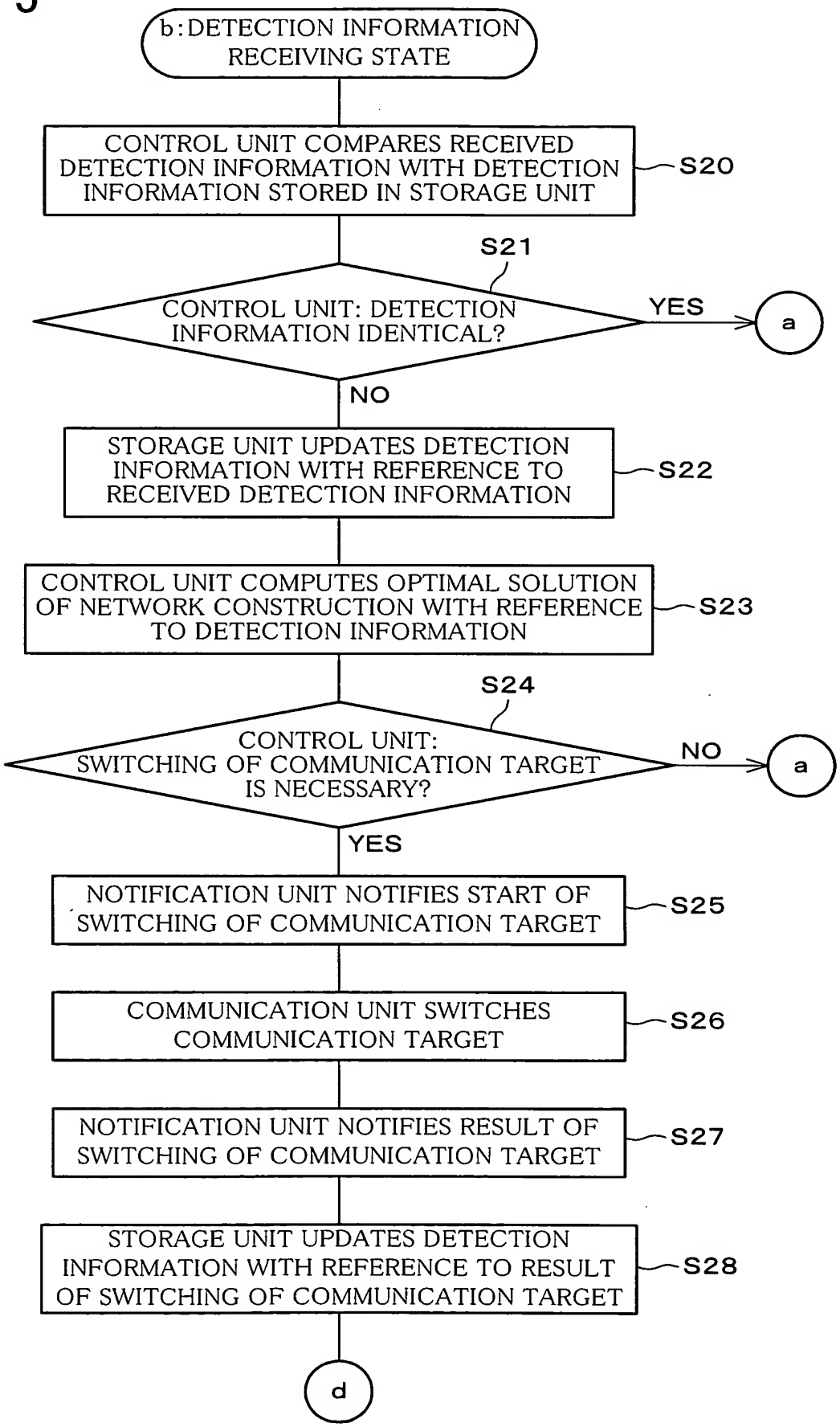

b:DETECTION INFORMATION RECEIVING STATE
CONTROL UNIT COMPARES RECEIVED DETECTION INFORMATION WITH DETECTION INFORMATION STORED IN STORAGE UNIT
S20
S21
CONTROL UNIT: DETECTION INFORMATION IDENTICAL?
YES
a
NO
STORAGE UNIT UPDATES DETECTION INFORMATION WITH REFERENCE TO RECEIVED DETECTION INFORMATION
S22
CONTROL UNIT COMPUTES OPTIMAL SOLUTION OF NETWORK CONSTRUCTION WITH REFERENCE TO DETECTION INFORMATION
S23
S24
CONTROL UNIT: SWITCHING OF COMMUNICATION TARGET IS NECESSARY?
NO
a
YES
NOTIFICATION UNIT NOTIFIES START OF SWITCHING OF COMMUNICATION TARGET
S25
COMMUNICATION UNIT SWITCHES COMMUNICATION TARGET
S26
NOTIFICATION UNIT NOTIFIES RESULT OF SWITCHING OF COMMUNICATION TARGET
S27
STORAGE UNIT UPDATES DETECTION INFORMATION WITH REFERENCE TO RESULT OF SWITCHING OF COMMUNICATION TARGET
S28
d

FIG. 6

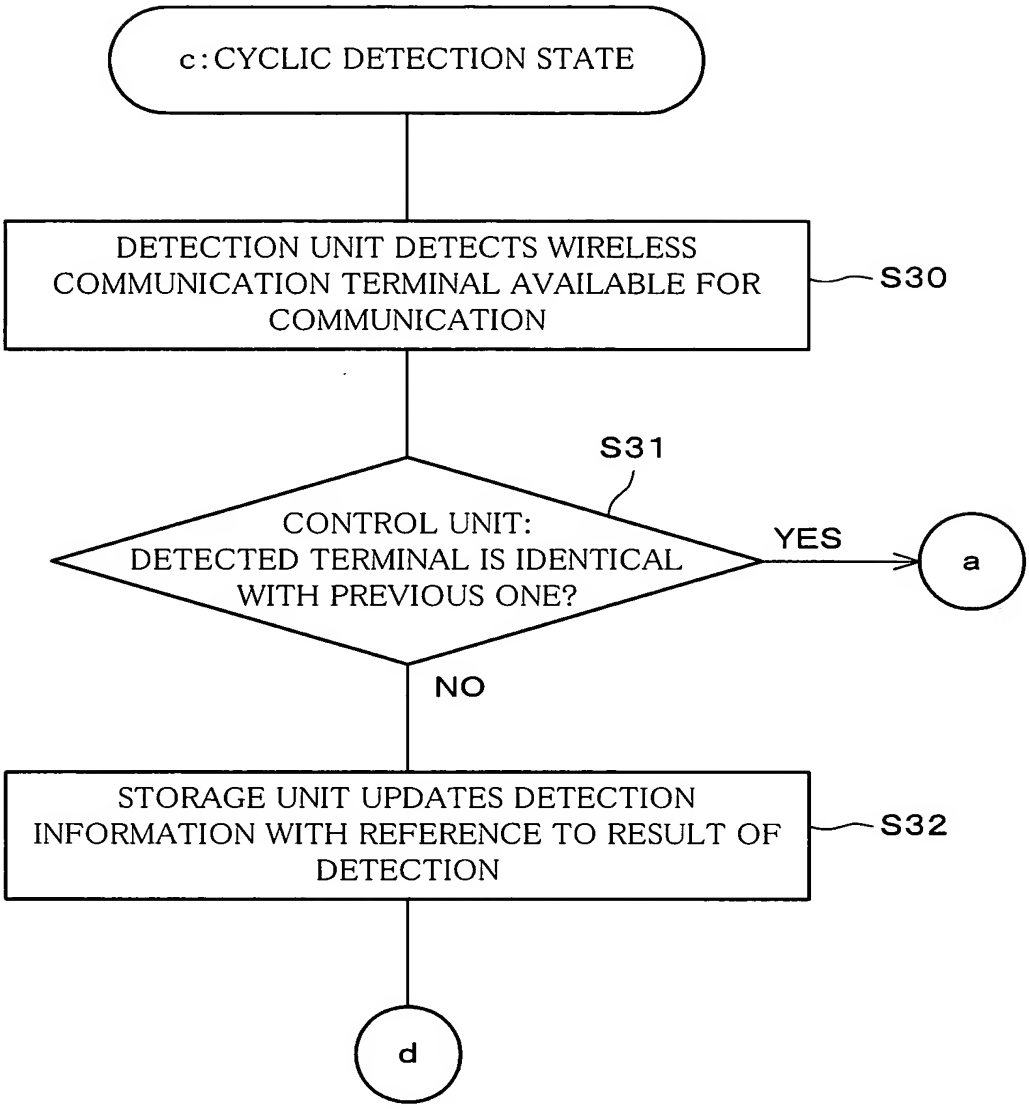

c:CYCLIC DETECTION STATE
DETECTION UNIT DETECTS WIRELESS COMMUNICATION TERMINAL AVAILABLE FOR COMMUNICATION
S30
S31
CONTROL UNIT: DETECTED TERMINAL IS IDENTICAL WITH PREVIOUS ONE?
YES
a
NO
STORAGE UNIT UPDATES DETECTION INFORMATION WITH REFERENCE TO RESULT OF DETECTION
S32
d

FIG. 7

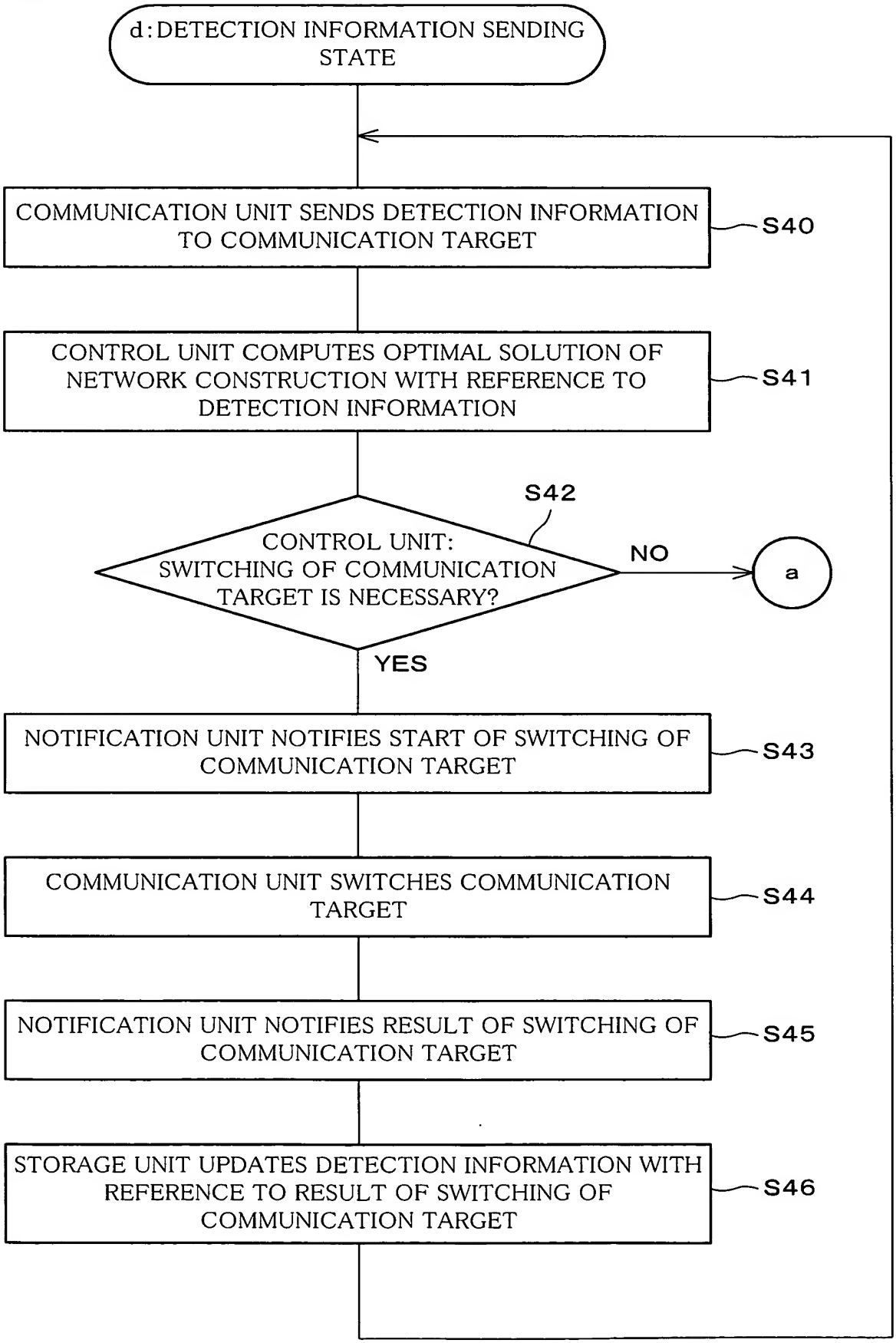

d:DETECTION INFORMATION SENDING STATE
COMMUNICATION UNIT SENDS DETECTION INFORMATION TO COMMUNICATION TARGET
S40
CONTROL UNIT COMPUTES OPTIMAL SOLUTION OF NETWORK CONSTRUCTION WITH REFERENCE TO DETECTION INFORMATION
S41
S42
CONTROL UNIT: SWITCHING OF COMMUNICATION TARGET IS NECESSARY?
NO
a
YES
NOTIFICATION UNIT NOTIFIES START OF SWITCHING OF COMMUNICATION TARGET
S43
COMMUNICATION UNIT SWITCHES COMMUNICATION TARGET
S44
NOTIFICATION UNIT NOTIFIES RESULT OF SWITCHING OF COMMUNICATION TARGET
S45
STORAGE UNIT UPDATES DETECTION INFORMATION WITH REFERENCE TO RESULT OF SWITCHING OF COMMUNICATION TARGET
S46

FIG. 8

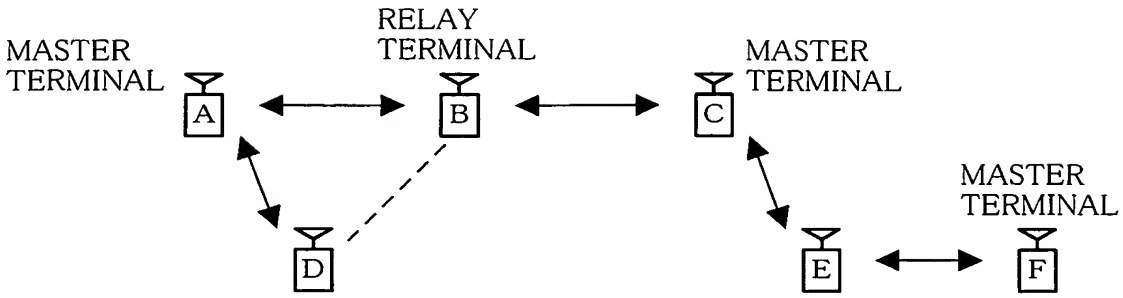


FIG. 9

RESULT OF DETECTION IN TERMINAL A		
TERMINAL B	DETECTED	CONNECTED
TERMINAL C	NOT DETECTED	
TERMINAL D	DETECTED	CONNECTED
TERMINAL E	NOT DETECTED	
TERMINAL F	NOT DETECTED	

RESULT OF DETECTION IN TERMINAL B		
TERMINAL A	DETECTED	CONNECTED
TERMINAL C	DETECTED	CONNECTED
TERMINAL D	DETECTED	
TERMINAL E	NOT DETECTED	
TERMINAL F	NOT DETECTED	

RESULT OF DETECTION IN TERMINAL C		
TERMINAL A	NOT DETECTED	
TERMINAL B	DETECTED	CONNECTED
TERMINAL D	NOT DETECTED	
TERMINAL E	DETECTED	CONNECTED
TERMINAL F	NOT DETECTED	

RESULT OF DETECTION IN TERMINAL D		
TERMINAL A	DETECTED	CONNECTED
TERMINAL B	DETECTED	
TERMINAL C	NOT DETECTED	
TERMINAL E	NOT DETECTED	
TERMINAL F	NOT DETECTED	

RESULT OF DETECTION IN TERMINAL E		
TERMINAL A	NOT DETECTED	
TERMINAL B	NOT DETECTED	
TERMINAL C	DETECTED	CONNECTED
TERMINAL D	NOT DETECTED	
TERMINAL F	DETECTED	CONNECTED

RESULT OF DETECTION IN TERMINAL F		
TERMINAL A	NOT DETECTED	
TERMINAL B	NOT DETECTED	
TERMINAL C	NOT DETECTED	
TERMINAL D	NOT DETECTED	
TERMINAL E	DETECTED	CONNECTED

FIG. 10 (a)

(TERMINALS WITH CIRCLES CAN PARTICIPATE IN NETWORK)

MASTER TERMINAL	TERMINAL ELIGIBLE TO PARTICIPATE IN NETWORK					
	TERMINAL A	TERMINAL B	TERMINAL C	TERMINAL D	TERMINAL E	TERMINAL F
TERMINAL A	○	○		○		
TERMINAL B	○	○	○	○		
TERMINAL C		○	○		○	
TERMINAL D	○	○		○		
TERMINAL E			○		○	○
TERMINAL F					○	○

FIG. 10 (b)

(TERMINALS WITH CIRCLES CAN PARTICIPATE IN NETWORK, TERMINALS WITH DOUBLE CIRCLES CAN BE SET AS RELAY TERMINALS)

MASTER TERMINAL		TERMINAL ELIGIBLE TO PARTICIPATE IN NETWORK					
		TERMINAL A	TERMINAL B	TERMINAL C	TERMINAL D	TERMINAL E	TERMINAL F
TERMINAL A	TERMINAL B	◎	◎	○	◎		
TERMINAL A	TERMINAL C	○	◎	○	○	○	
TERMINAL A	TERMINAL D	◎	◎		◎		
TERMINAL A	TERMINAL E	○	○	○	○	○	○
TERMINAL A	TERMINAL F	○	○		○		○
TERMINAL B	TERMINAL C	○	◎	◎	○	○	
TERMINAL B	TERMINAL D	◎	◎	○	◎		
TERMINAL B	TERMINAL E	○	○	◎	○	○	○
TERMINAL B	TERMINAL F	○	○	○	○	○	○
TERMINAL C	TERMINAL D	○	◎	○	○	○	
TERMINAL C	TERMINAL E		○	◎		◎	○
TERMINAL C	TERMINAL F		○	○		◎	○
TERMINAL D	TERMINAL E	○	○	○	○	○	○
TERMINAL D	TERMINAL F	○	○		○	○	○
TERMINAL E	TERMINAL F			○		◎	◎

FIG. 11

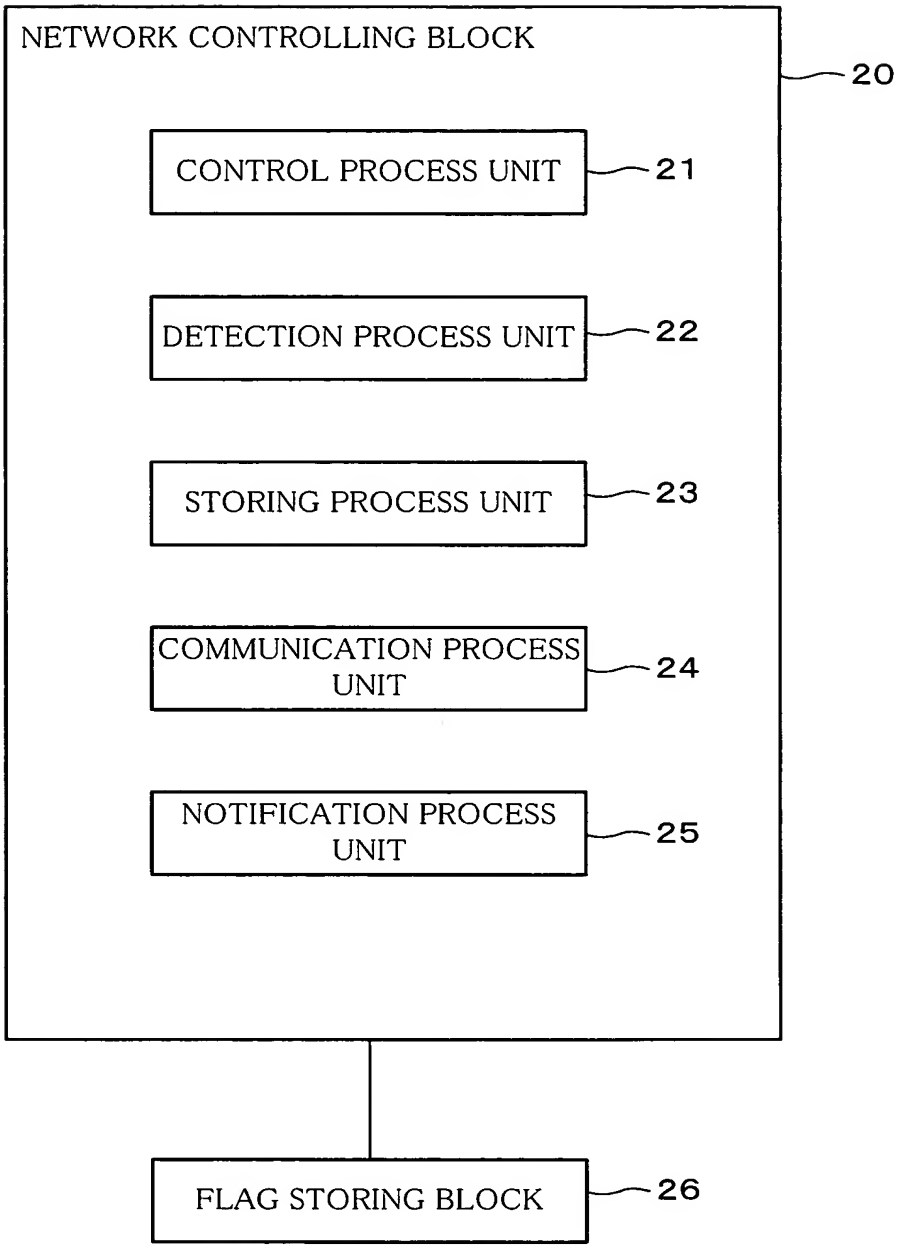

NETWORK CONTROLLING BLOCK
20
CONTROL PROCESS UNIT
21
DETECTION PROCESS UNIT
22
STORING PROCESS UNIT
23
COMMUNICATION PROCESS UNIT
24
NOTIFICATION PROCESS UNIT
25
FLAG STORING BLOCK
26

FIG. 12

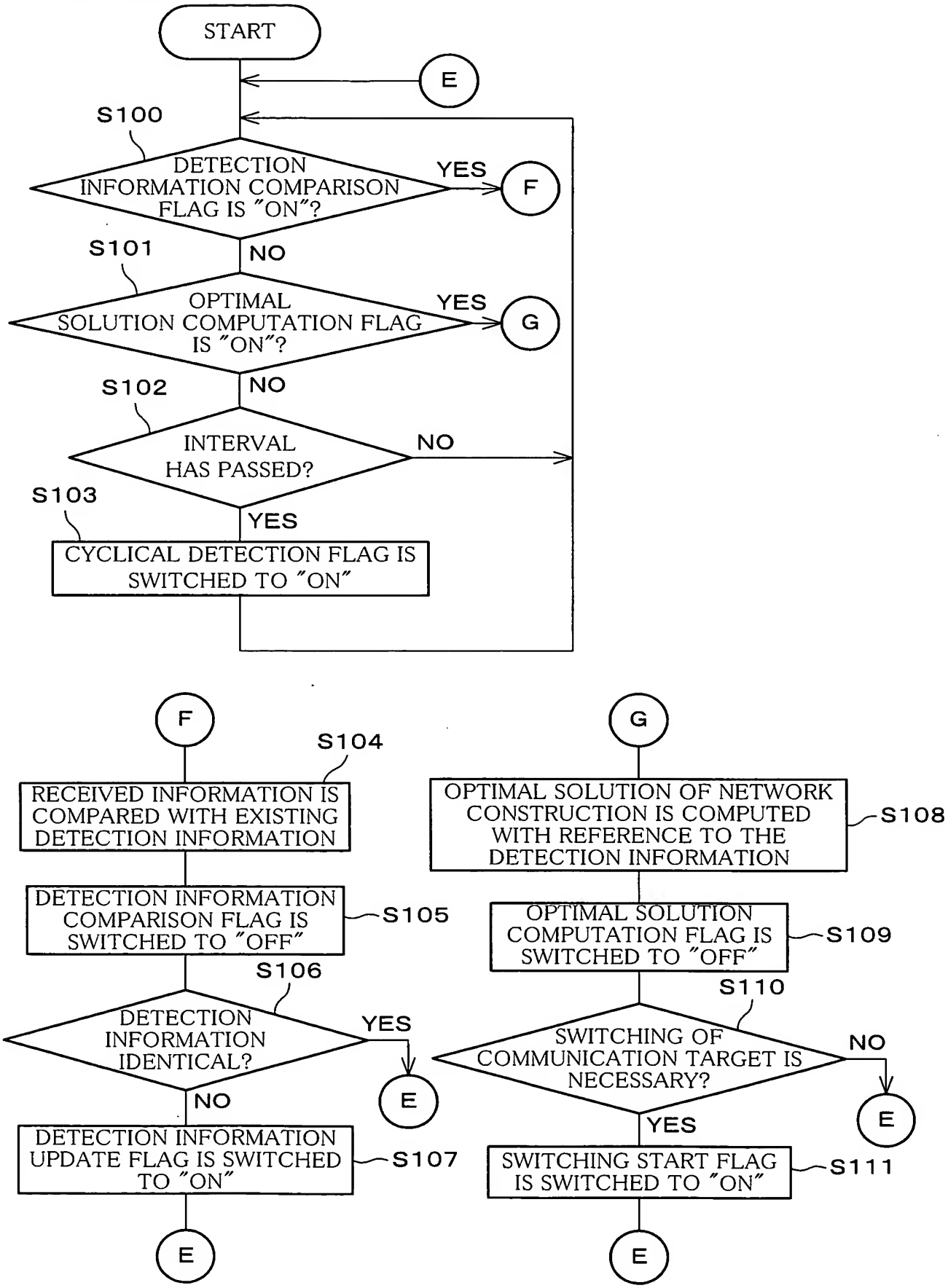

START
E
S100
DETECTION INFORMATION COMPARISON FLAG IS "ON"?
YES
F
NO
S101
OPTIMAL SOLUTION COMPUTATION FLAG IS "ON"?
YES
G
NO
S102
INTERVAL HAS PASSED?
NO
S103
YES
CYCLICAL DETECTION FLAG IS SWITCHED TO "ON"
F
S104
RECEIVED INFORMATION IS COMPARED WITH EXISTING DETECTION INFORMATION
DETECTION INFORMATION COMPARISON FLAG IS SWITCHED TO "OFF"
S105
S106
DETECTION INFORMATION IDENTICAL?
YES
E
NO
DETECTION INFORMATION UPDATE FLAG IS SWITCHED TO "ON"
S107
E
G
OPTIMAL SOLUTION OF NETWORK CONSTRUCTION IS COMPUTED WITH REFERENCE TO THE DETECTION INFORMATION
S108
OPTIMAL SOLUTION COMPUTATION FLAG IS SWITCHED TO "OFF"
S109
S110
SWITCHING OF COMMUNICATION TARGET IS NECESSARY?
NO
E
YES
SWITCHING START FLAG IS SWITCHED TO "ON"
S111
E

FIG. 13

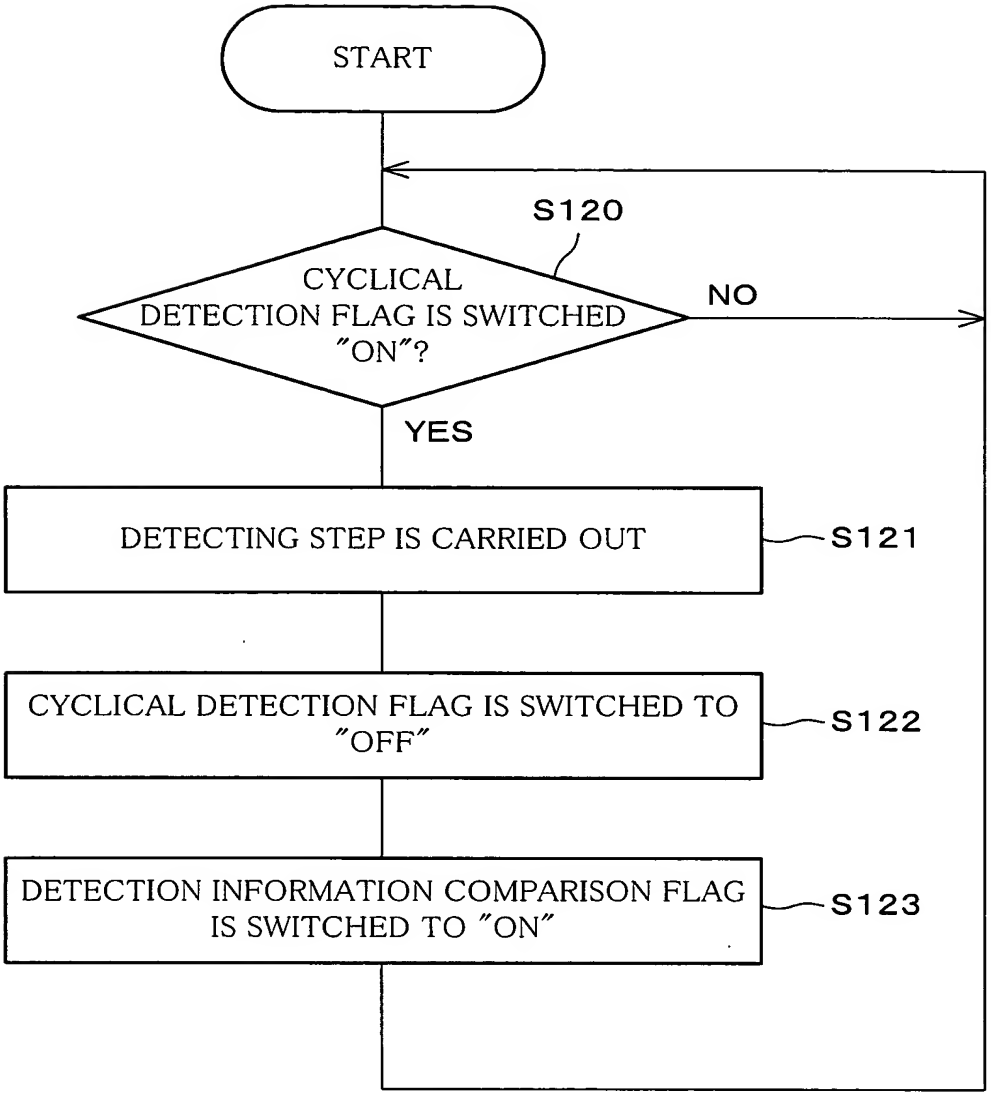

START
S120
CYCLICAL DETECTION FLAG IS SWITCHED "ON"?
NO
YES
DETECTING STEP IS CARRIED OUT
S121
CYCLICAL DETECTION FLAG IS SWITCHED TO "OFF"
S122
DETECTION INFORMATION COMPARISON FLAG IS SWITCHED TO "ON"
S123

FIG. 14

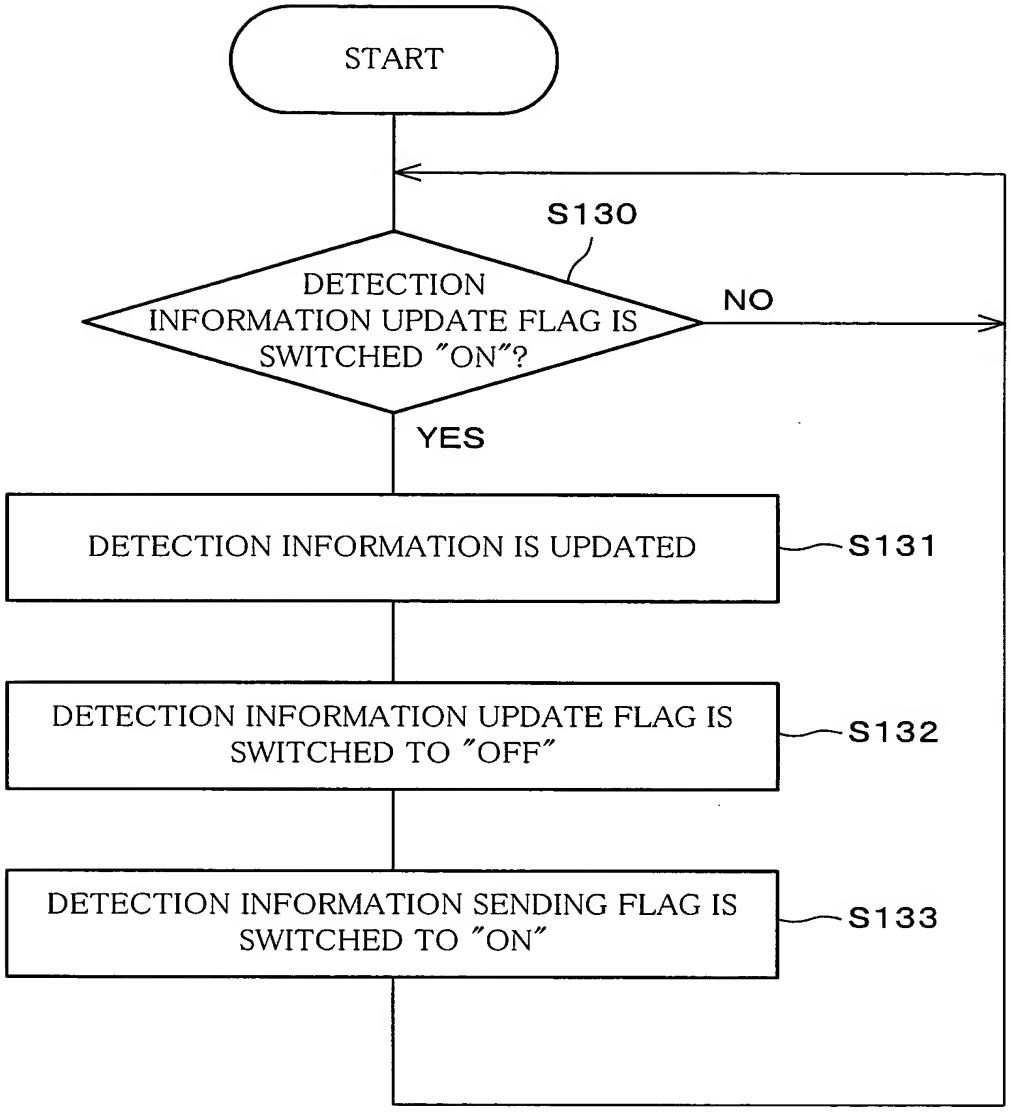

START
S130
DETECTION INFORMATION UPDATE FLAG IS SWITCHED "ON"?
NO
YES
DETECTION INFORMATION IS UPDATED
S131
DETECTION INFORMATION UPDATE FLAG IS SWITCHED TO "OFF"
S132
DETECTION INFORMATION SENDING FLAG IS SWITCHED TO "ON"
S133

FIG. 15

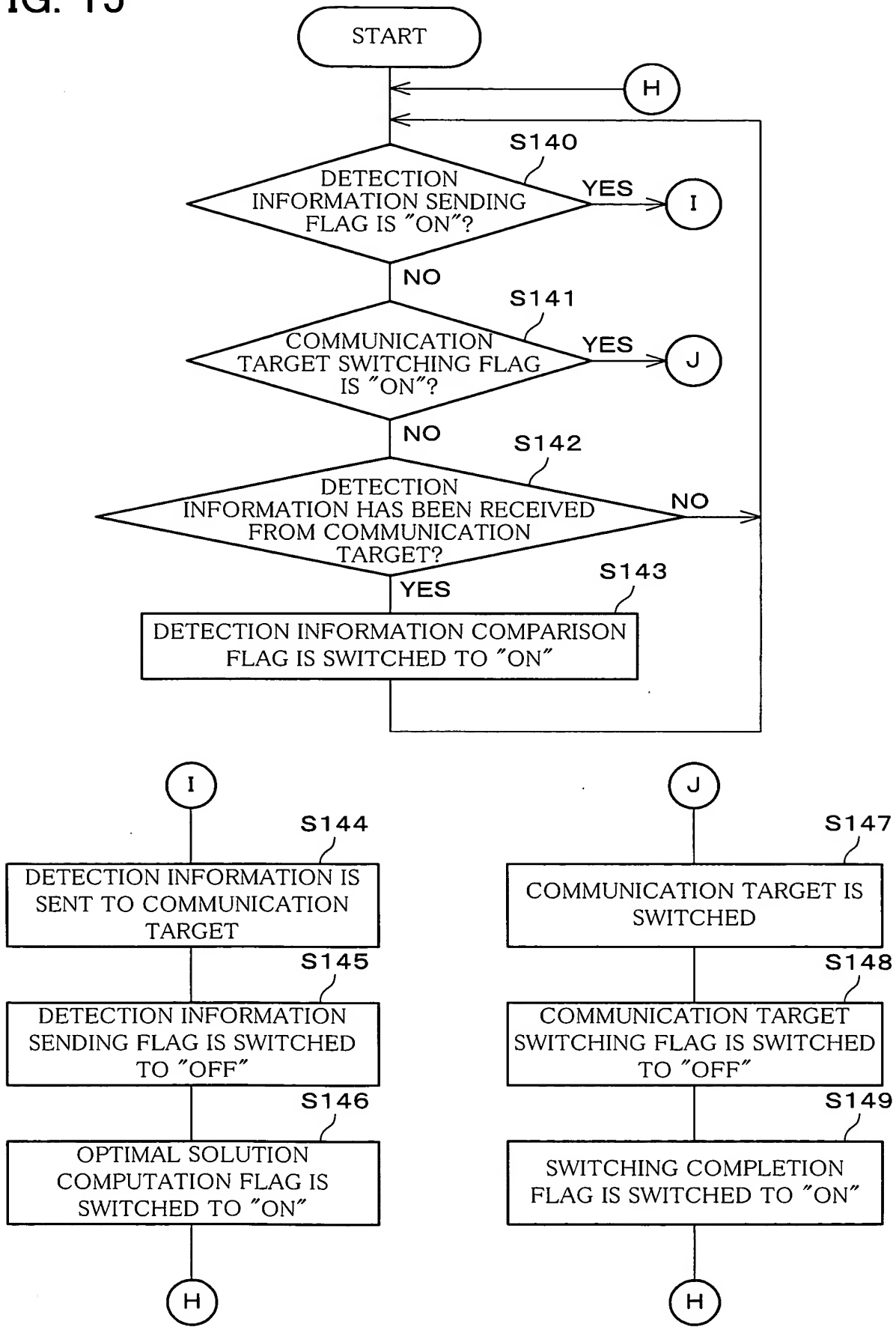
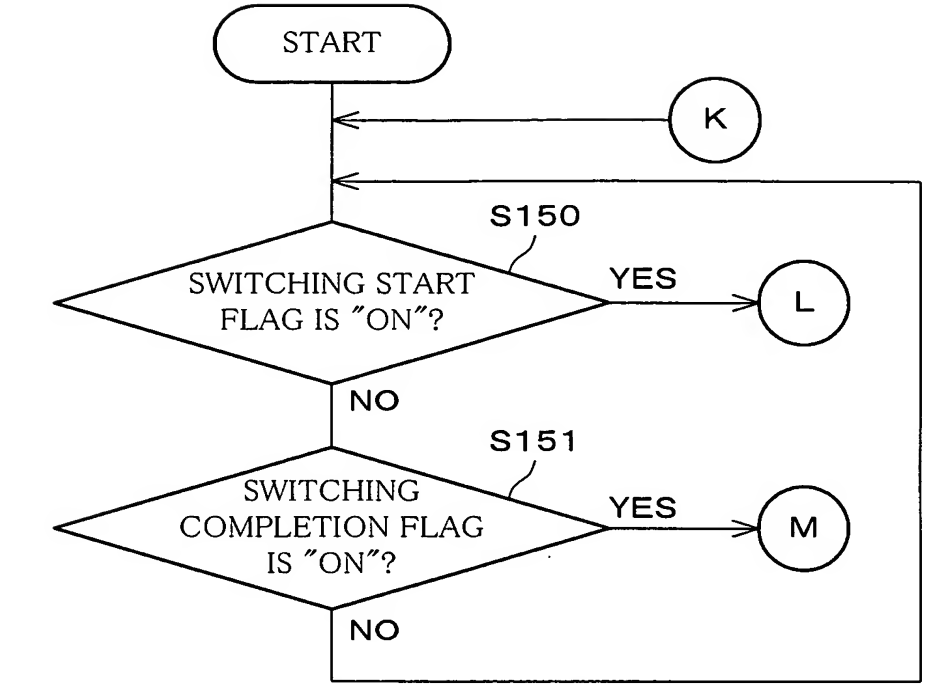

START
H
S140
DETECTION INFORMATION SENDING FLAG IS "ON"?
YES
I
NO
S141
COMMUNICATION TARGET SWITCHING FLAG IS "ON"?
YES
J
NO
S142
DETECTION INFORMATION HAS BEEN RECEIVED FROM COMMUNICATION TARGET?
NO
YES
S143
DETECTION INFORMATION COMPARISON FLAG IS SWITCHED TO "ON"
I
S144
DETECTION INFORMATION IS SENT TO COMMUNICATION TARGET
S145
DETECTION INFORMATION SENDING FLAG IS SWITCHED TO "OFF"
S146
OPTIMAL SOLUTION COMPUTATION FLAG IS SWITCHED TO "ON"
H
J
S147
COMMUNICATION TARGET IS SWITCHED
S148
COMMUNICATION TARGET SWITCHING FLAG IS SWITCHED TO "OFF"
S149
SWITCHING COMPLETION FLAG IS SWITCHED TO "ON"
H

FIG. 16


START
K
S150
SWITCHING START FLAG IS "ON"?
YES
L
NO
S151
SWITCHING COMPLETION FLAG IS "ON"?
YES
M
NO

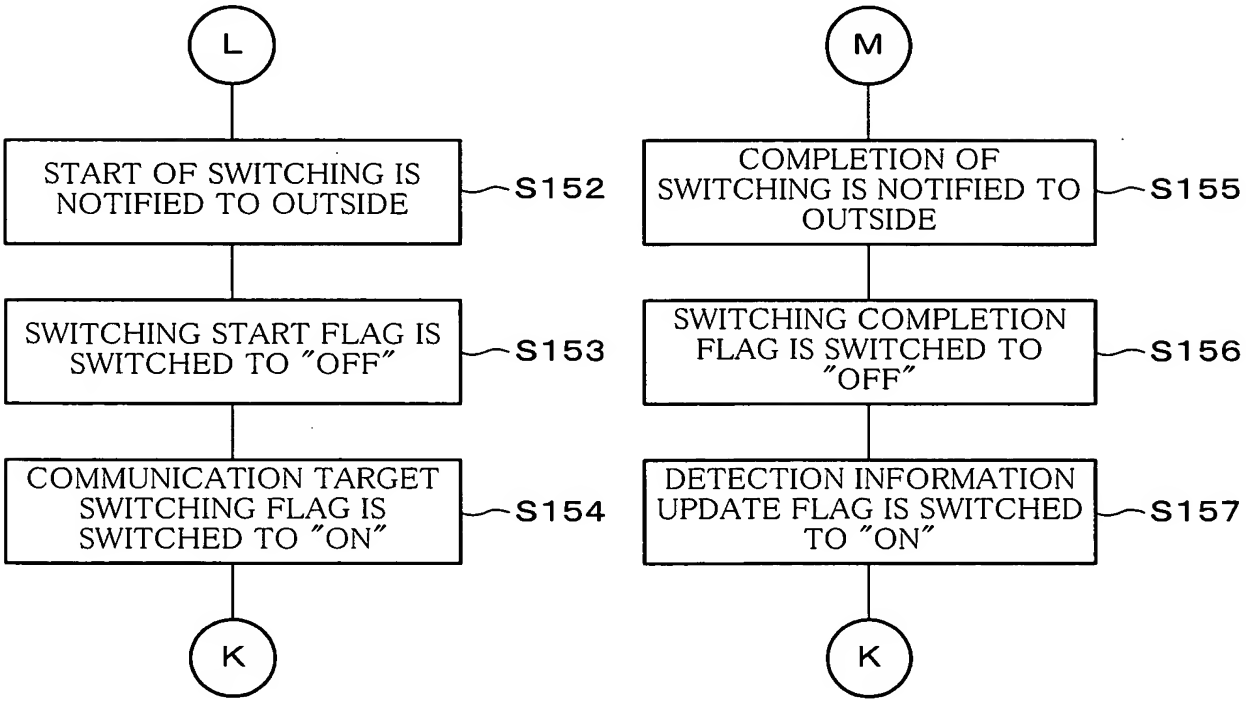

L
START OF SWITCHING IS NOTIFIED TO OUTSIDE
S152
SWITCHING START FLAG IS SWITCHED TO "OFF"
S153
COMMUNICATION TARGET SWITCHING FLAG IS SWITCHED TO "ON"
S154
K
M
COMPLETION OF SWITCHING IS NOTIFIED TO OUTSIDE
S155
SWITCHING COMPLETION FLAG IS SWITCHED TO "OFF"
S156
DETECTION INFORMATION UPDATE FLAG IS SWITCHED TO "ON"
S157
K

FIG. 17

RESULT OF DETECTION IN TERMINAL A					
	TERMINAL B	DETECTED	CONNECTED	PARTICIPATE IN NETWORK	DUAL
	TERMINAL C	NOT DETECTED	–	PARTICIPATE IN NETWORK	DUAL
	TERMINAL D	DETECTED	–	–	DUAL
	TERMINAL E	NOT DETECTED	–	PARTICIPATE IN NETWORK	SLAVE ONLY

RESULT OF DETECTION IN TERMINAL B					
	TERMINAL A	DETECTED	CONNECTED	PARTICIPATE IN NETWORK	DUAL
	TERMINAL C	DETECTED	CONNECTED	PARTICIPATE IN NETWORK	DUAL
	TERMINAL D	DETECTED	–	–	DUAL
	TERMINAL E	NOT DETECTED	–	PARTICIPATE IN NETWORK	SLAVE ONLY

RESULT OF DETECTION IN TERMINAL C					
	TERMINAL A	NOT DETECTED	CONNECTED	PARTICIPATE IN NETWORK	DUAL
	TERMINAL B	DETECTED	–	PARTICIPATE IN NETWORK	DUAL
	TERMINAL D	DETECTED	–	–	DUAL
	TERMINAL E	DETECTED	CONNECTED	PARTICIPATE IN NETWORK	SLAVE ONLY

RESULT OF DETECTION IN TERMINAL E					
	TERMINAL A	NOT DETECTED	–	PARTICIPATE IN NETWORK	DUAL
	TERMINAL B	NOT DETECTED	–	PARTICIPATE IN NETWORK	DUAL
	TERMINAL C	DETECTED	CONNECTED	PARTICIPATE IN NETWORK	DUAL
	TERMINAL D	NOT DETECTED	–	–	DUAL

FIG. 18 (a)

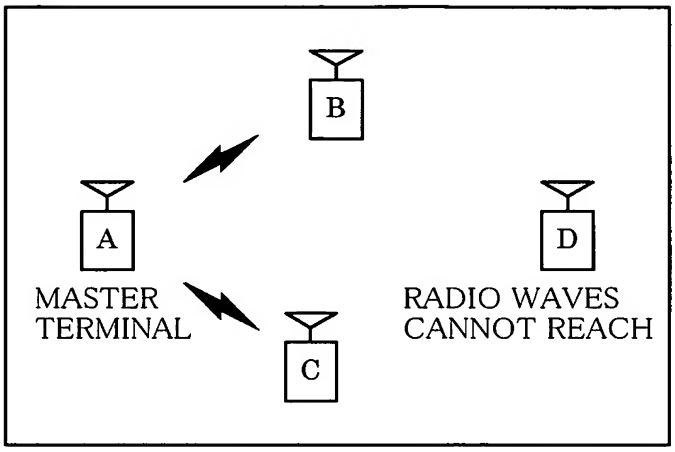


FIG. 18 (b)

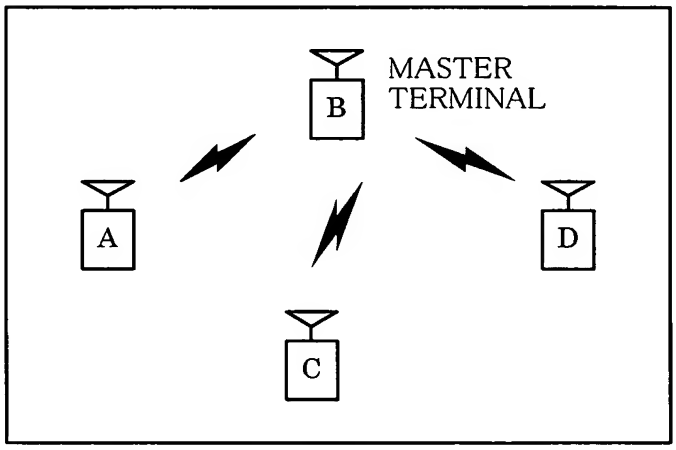


FIG. 19 (a)

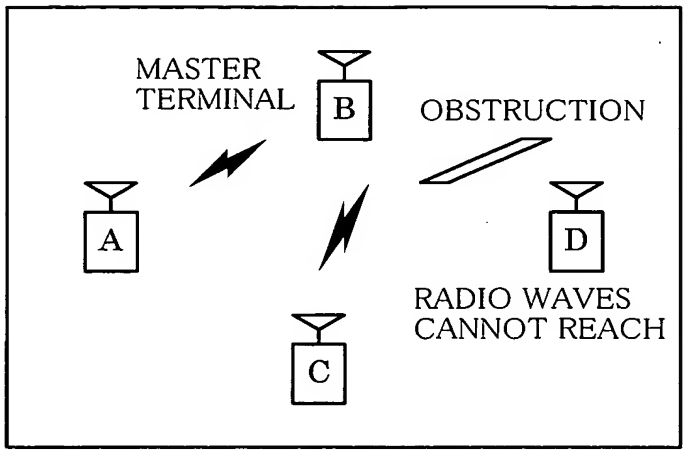
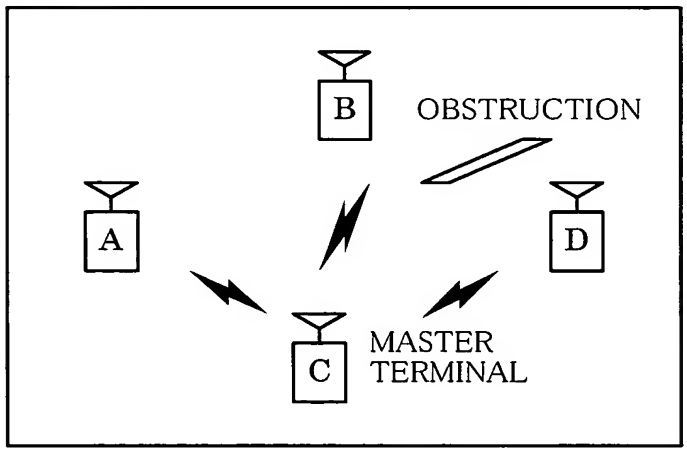



FIG. 19 (b)